

Appl. No. 10/709,175
Docket No. 146442/GEM-0120

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended) An electronic assembly comprising:
a first layer having a first interface surface and a plurality of cavities formed in the first interface surface;
a second layer having a second interface surface and a plurality of electrically conductive projections disposed at the second interface surface, wherein the plurality of projections are aligned with and disposed at the plurality of cavities, the second layer comprising a diode array having a plurality of backlit photodiodes in electrical communication with the plurality of projections; and
an electrically conductive connecting material disposed at the plurality of cavities such that the connecting material non-separably connects the plurality of projections to the respective plurality of cavities, each of the plurality of cavities being configured to constrain the connecting material disposed thereat from outward flow;
wherein the plurality of cavities are formed having a depth d in the first interface surface;
wherein the first interface surface is disposed apart from the second interface surface by a gap g; and
wherein the plurality of projections have a length h that is equal to or less than the sum of the depth d and the gap g, such that the connecting material bridges the distance defined by (d+g-h).

2. (canceled)

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3. (original) The assembly of Claim 1, wherein:
the plurality of projections have a width w equal to or greater than about 100 microns and equal to or less than about 700 microns.

4. (original) The assembly of Claim 3, wherein:
the plurality of projections have a width w equal to about 500 microns.

5. (original) The assembly of Claim 3, wherein:
the pitch of the plurality of projections is equal to or greater than about 1.1 times the width w and equal to or less than about 3 times the width w .

6. (original) The assembly of Claim 5, wherein:
the pitch of the plurality of projections is equal to about 2 times the width w .

7. (original) The assembly of Claim 1, wherein:
the plurality of projections are shaped to mirror the shape of the plurality of cavities.

8. (currently amended) The assembly of Claim 1, wherein:
the first layer comprises a ceramic substrate;
~~the second layer comprises a diode array having a plurality of backlit photodiodes in electrical communication with the plurality of projections; and~~
the connecting material comprises a conductive epoxy, a conductive solder, or any combination comprising at least one of the foregoing materials.

9. (canceled)

10. (currently amended) The assembly of Claim [[9]] 1, wherein adjacent projections are absent direct electrical communication.

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11. (original) The assembly of Claim 8, wherein:
the assembly comprises a light detector for use in medical diagnostic equipment.

12. (original) The assembly of Claim 8, wherein:
the plurality of photodiodes are spaced on the first layer with an edge spacing equal to or less than about 100 micrometers.

13. (original) The assembly of Claim 12, wherein:
the plurality of photodiodes are spaced on the first layer with an edge spacing equal to or less than about 25 micrometers.

14. (original) The assembly of Claim 13, wherein:
the plurality of photodiodes are spaced on the first layer with an edge spacing equal to about 10 micrometers.

15-34. (canceled)

35. (currently amended) An electronic assembly comprising:
a first layer having a plurality of eavities pockets;
a second layer comprising a diode array having a plurality of backlit photodiodes
having a plurality of electrically conductive projections, wherein the plurality of
projections are aligned with and disposed at the plurality of eavities pockets with a
defined distance therebetween; and
an electrically conductive connecting material disposed at the plurality of eavities
pockets such that the plurality of projections are electrically and non-separably bonded to
the respective plurality of eavities pockets via the electrically conductive connecting
material;
wherein the conductive connecting material bridges the defined distance; and

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wherein each of the plurality of pockets are configured to constrain the connecting material disposed thereat from outward flow.

36. (new) A multi-layer backlit photodiode array electronic assembly, comprising:

a first layer having a plurality of pockets formed in a first interface surface;

a second layer having a plurality of electrically conductive projections disposed at a second interface surface, wherein the plurality of projections are aligned with and disposed at the plurality of cavities, and wherein the plurality of projections and the plurality of pockets are spaced apart by a defined distance; and

an electrically conductive connecting material disposed between the plurality of pockets and the plurality of projections such that the connecting material bridges the defined distance and non-separably connects the plurality of projections to the plurality of pockets, each of the plurality of pockets being configured to constrain the connecting material disposed thereat from outward flow;

wherein the second layer comprises the backlit photodiode array.